

REMARKS

Pending Claims:

Upon entry of this amendment, claims 1 and 11-26 are pending. Claims 1 and 11-20 are amended by this Response. Claims 21-26 have been added. Entry of these amendments is respectfully requested.

Drawings:

The drawings are objected for failing to show an exact mechanism for mounting the ring for rotational movement about the diffuser. Applicant respectfully submits that those of ordinary skill in the art would know how to mount the ring in such a manner and therefore the drawings in conjunction with the specification adequately disclose and enable this feature. While the idea to add a rotationally-mounted ring is novel and nonobvious, once Applicant has provided that idea, those of skill in the art would be well able to identify ways of attaching the ring in such a manner. A bushing is one possible way of accomplishing this.

Specification:

The phrase "notional prolongation of the generatrix" as a whole may not be commonly used. Nevertheless, the meaning will be understood by those of skill in the art since all of the words have defined meanings, particularly given the illustration of the meaning of this phrase in this context on the drawing. The phrase "notional prolongation of the generatrix" is an apt way to describe this. The word "notional" is defined as "hypothetical or imaginary." (Compact Oxford English Dictionary: http://www.askoxford.com:80/concise_oed/notional?view=uk.) Merriam-Webster Online defines "notional" as meaning "theoretical, speculative" or "in the mind only: imaginary". <http://www.merriam-webster.com/dictionary/notional>.

The word "prolong" is defined as "extend in spatial length" and "prolongation" is listed as a noun derivative of prolong. (Compact Oxford English Dictionary: http://www.askoxford.com:80/concise_oed/prolong?view=uk.)

Together, "notional prolongation" means imaginary extension.

Generatrix means “: a point, line, or surface whose motion generates a line, surface, or solid.” (Merriam-Webster’s Online Dictionary: <http://www.merriam-webster.com/dictionary/generatrix>.) Thus, the Applicants intend the words “notional prolongation of the generatrix” to describe the shape (a frusto-conical shape) that results when the imaginary extension line (shown dotted in FIGS. 1, 2, and 3) is revolved around the longitudinal axis (shown by the dotted centerline shown in FIGS. 1, 2, and 3).

In short, Applicants intend that the phrase be interpreted as the imaginary extension of the tapered portion of the internal wall of the diffuser, as indicated by the dotted line in FIGS. 1, 2 and 3. If the Examiner wishes, the Applicants will amend the specification to include this clarification. However, the Applicants submit that the phrase will be understood, as all groups of words are, from the meaning of each of the words.

In light of the explanation above, the Applicant has not amended claim 11.

With regard to claim 12, the Examiner was correct to note the direction error and claim 12 is amended accordingly.

Claim 20 is amended to eliminate its multiple dependencies.

Rejection under 35 U.S.C. §112 (2nd paragraph)

The Action includes a number of rejections on the grounds of indefiniteness in the Office Action. Amendment is made to claims 1, 11, 14, 15, 16, 19 and 20, to address the antecedent basis issues identified by the Examiner.

Rejection under 35 U.S.C. §102(b)

The Examiner has rejected claims 1 and 11 as being anticipated by U.S. 5,620,316 to Duboudin. The Applicant submits that Duboudin is directed to an oxy-burner, rather than to a fuel injector. (See for example col. 2, lines 50-55: The oxyburner 1 comprises at least one peripheral conduit 8 for the ejection of oxygenated combustible gas...) That is, Duboudin teaches a device that introduces oxygenated air along with fuel. The Applicant’s recited invention, in contrast, teaches a device for introducing fuel through two ports (a “mouth” and a “gas supply pipe”) into a furnace. These two fuel

streams are diffused through the recited geometry of relative diameter sizes of the mouth of the gas supply line and the central nozzle pipe being less than 3, such that the resulting combined fuel stream has a low-turbulence, free jet characteristic.

Combustible gas or air is not introduced through the Applicant's recited fuel injector.

In fact, in situ, the fuel injector will be spaced from an air supply.

Thus, Duboudin is non-analogous art. Further Duboudin does not teach a structure for combining two streams of fuel and therefore does not anticipate the Applicants' recited structure.

Rejection under 35 U.S.C. §103

The Examiner has rejected claims 12-13 and 15 as being unpatentable over Duboudin in view of US 6,190,158 to Legiret; claims 14 and 16 as being unpatentable over Duboudin in view of US 1,679,830 to Lang; claims 17-20 as being unpatentable over Duboudin in view of US 5,515,794 to Kassman. The Applicants respectfully submit that each of these cited references relate to oxy-burners that provide for the introduction of combustible air along with fuel. Legiret identifies element 8 as an "oxidizer feed passage"; Lang describes element 35 as being an "airfeed pipe" (see for example, page 2, line 12 and page 1 lines 110-113); Kassman describes its device as being a "burner for partial oxidation process".

In contrast, the Applicants' claimed device introduces two fuel streams and does not provide for the introduction of air or combustible gas through its injector. It is expected that, in situ, the air (or combustible gas) inlet for the industrial furnace will be spaced from the Applicants' fuel injector.

The Examiner has not cited a single reference that would be analogous art, i.e. fuel injectors. Further, one simply would not combine the knowledge of oxyburners in the field of fuel gas injectors - according to top of page 1 and page 2 bottom paragraph and page 3 below half page and page 4 the disadvantageous effects of the prior art are described wherein early combustion at the breakaway edge of an air supply takes place, namely harming the refractory material of the furnace wall. These disadvantageous even more apply to oxyburners, which SUPPLY directly air for combustion. Fuel injectors by their nature involve the prevention of air. Consequently a person skilled in the art would not dare to take knowledge from oxyburners in the field of fuel gas injectors.

Therefore, Applicants' claimed device teaches away from those taught by Duboudin, Legiret, Lang and Kassman, since Applicants' device does not provide for the combined streaming of combustible gas along with fuel, but instead provides only for the introduction of fuel.

New claims 24 and 25 are directed to the furnace as a whole, including a gas injector, with a separate air supply distinct from the gas injector.

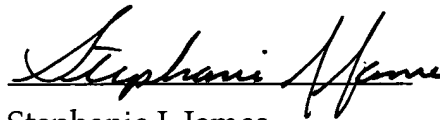
CONCLUSION

All of the claims remaining in this application should now be seen to be in condition for allowance. The prompt issuance of a notice to that effect is solicited.

Respectfully submitted,
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By their attorneys:

Date: _____

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